

We claim:

- 1 1. A wireless communication system comprising:  
2 a receiver having an adaptive array, the adaptive array having at least two antennas to  
3 receive a signal and produce at least two received signals;  
4 a transmitter having at least two transmission channels for communicating the signal from  
5 the transmitter to the receiver;  
6 means for suppressing interference at the receiver by applying an interference suppression  
7 technique when combining said at least two received signals; and  
8 means for selecting a channel at the transmitter based on channel performance at the  
9 receiver for each of said at least two transmission channels, the channel performance based on a  
10 combining technique different from the interference suppression technique.
- 11 2. The system of claim 1, wherein the receiver communicates with at least two transmitters.
- 12 3. The system of claim 1, wherein the transmitter is a mobile terminal and the receiver is a base  
1 station.
- 1 4. The system of claim 1, wherein the transmitter is a base station and the receiver is a mobile  
2 terminal.
- 1 5. The system of claim 1, wherein the means for suppressing interference applies minimum  
2 mean square error combining.

1 6. The system of claim 5, wherein the means for selecting the best performing channel applies  
2 maximum ratio combining.

1 7. The system of claim 5, wherein the means for selecting the best performing channel applies  
2 selection diversity combining.

1 8. The system of claim 5, wherein the means for selecting the best performing channel applies  
2 equal gain combining.

1 9. The system of claim 5, wherein the means for selecting the best performing channel applies  
2 switched diversity combining.

1 10. A method of wireless communication between a transmitter and a receiver comprising the  
2 steps of:

3 communicating a signal from the transmitter to the receiver, the transmitter having at least  
4 two transmission channels;

5 receiving the signal at a receiver having an adaptive array, the adaptive array having at least  
6 two antennas to receive the signal and produce at least two received signals;

7 suppressing interference at the receiver by applying an interference suppression technique  
8 when combining said at least two received signals; and

- 9 selecting the transmission channel at the transmitter based on channel performance at the  
10 receiver for each of said at least two transmission channels, channel performance based on a  
11 combining technique different from the interference suppression technique.
- 1 11. The method of claim 10, wherein the receiver communicates with at least two transmitters.
- 1 12. The method of claim 10, wherein the transmitter is a mobile terminal and the receiver is a  
2 base station.
- 10660 13. The method of claim 10, wherein the transmitter is a base station and the receiver is a  
2 mobile terminal.
- 10660 14. The method of claim 10, wherein the suppressing step applies minimum mean square error  
2 combining.
- 1 15. The method of claim 14, wherein the selecting step applies maximum ratio combining.
- 1 16. The method of claim 14, wherein the selecting step applies selection diversity combining.
- 1 17. The method of claim 14, wherein the selecting step applies equal gain combining.
- 1 18. The method of claim 14, wherein the selecting step applies switched diversity combining.